

CLAIMS

1. A method for injecting an injection molded part made of plastic, using an injection unit having a gate (1) in a nozzle housing (2), the gate (1) being connected to a flow channel (5),

characterized in that

the gate (1) is opened and closed by an inner needle (4), and plastic flowing from the flow channel (5) to the gate (1) is predosed and injected by an outer needle (3), and/or a retention pressure is applied.

2. The method according to Claim 1, characterized in that the inner needle (4) is guided inside the outer needle (3), and the outer needle (3) performs a lifting motion in the nozzle housing (2).

3. The method according to Claim 1 or 2, characterized in that the flow channel (5) is closed at least during injection and/or during application of retention pressure.

4. The method according to Claim 2 or 3, characterized in that the lifting motion of the inner and/or outer needle (4, 3) is produced by mechanical, hydraulic, or electrical means.

5. The method according to at least one of Claims 1 through 4, characterized in that the volume of plastic inside the filling space (9) is essentially zero at the end of the injection process or of the application of the retention pressure.

6. The method according to at least one of Claims 1 through 5, characterized in that first the outer needle (3) is pulled back, thereby forming a filling space (9), and the filling space (9) is predosed with plastic from the flow channel (5), during which the inner needle (4) holds the gate (1) closed.

7. The method according to Claim 6, characterized in that at the end or after predosing, the gate (1) is opened by lifting the inner needle (4), and the predosed plastic material is pressed through the gate (1) into a cavity by a lifting motion of the outer needle (3).
8. The method according to Claim 7, characterized in that additional plastic material is introduced into the cavity, also to compensate for any shrinkage, by the at least one further lifting motion of the outer needle (3).
9. The method according to Claim 7 or 8, characterized in that the inner needle (4) closes the gate (19) at the end of the lifting motion of the outer needle (3) or at the end of a predetermined retention time.
10. The method according to at least one of Claims 1 through 6, characterized in that injection compression molding is performed in the gate (1).
11. The method according to Claim 10, characterized in that a tip of the inner needle (4) cooperates with a core in the gate (1).
12. The method according to Claim 11, characterized in that the outer needle presses in plastic material between the tip of the inner needle and the core.
13. The method according to Claim 11 or 12, characterized in that the injection molded part is ejected from the gate (1) by the inner needle (4).
14. The method according to at least one of Claims 1 through 13, characterized in that additional plastic material is introduced into the filling space (9) through at least one second, blockable flow channel.
15. A device for injecting an injection molded part made of plastic, having a gate (1) in a nozzle housing (2), the gate (1) being connected to a flow channel (5), characterized

in that an inner needle (4) is provided in the gate (1) in the nozzle housing (2), and an outer needle (3) is provided for dosing, pressing, and optionally applying pressure to the melt.

16. The device according to Claim 15, characterized in that the inner needle (4) is guided inside the outer needle (3).

17. The device according to Claim 15 or 16, characterized in that a blocking element is provided in the flow channel (5).

18. The device according to one of Claims 15 through 17, characterized in that the flow channel (5) opens into a filling space (9) in which the outer needle (3) is also guided.

19. The device according to Claim 18, characterized in that at least one additional flow channel (5b) opens into the filling space (9) and is likewise provided with a blocking element (7b).

20. The device according to at least one of Claims 15 through 19, characterized in that the nozzle housing (2) forms an injection unit with the two needles (3, 4) and the flow channel(s) (5, 5a, 5b), and the injection unit may be associated with a cavity.

21. The device according to at least one of Claims 15 through 20, characterized in that the gate (1) has an inner contour which approximately corresponds to an outer contour of the core and/or the needle.